A. GENERAL AND SPECIAL CONDITIONS

A. THESE SPECIFICATIONS APPLY TO THE ELECTRICAL WORK SHOWN ON THE PLANS AND DESCRIBED

B. PROVIDE LABOR AND MATERIAL REQUIRED FOR COMPLETE AND OPERATIONAL ELECTRICAL

C. THE SCOPE OF THE ELECTRICAL WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

2. LIGHTING SYSTEM INCLUDING FIXTURES, BRANCH CIRCUIT WIRING, AND CONTROLS

3. RACEWAYS FOR PROCESS EQUIPMENT WIRING

1. POWER SERVICE ENTRANCE AND POWER DISTRIBUTION SYSTEM

4. MECHANICAL SYSTEMS POWER AND CONTROL WIRING

5. TEMPORARY CONSTRUCTION POWER

2. SHOP DRAWINGS

A. SUBMIT TO THE ENGINEER FOUR COPIES OF CATALOG CUTS AND DIMENSIONAL DRAWINGS WHERE SUBMITTAL REQUIREMENTS ARE LISTED IN THESE SPECIFICATIONS BEFORE COMMENCEMENT OF

3. AS BUILT DRAWINGS

A. THE CONTRACTOR SHALL MAINTAIN ON THE JOB SITE AN UP-TO-DATE SET OF CONTRACT DRAWINGS AND SPECIFICATIONS, MARKED UP TO SHOW CONTRACT, AND FIELD CHANGES MADE DURING THE COURSE OF CONSTRUCTION. THESE CONTRACT DRAWINGS AND SPECIFICATIONS SHALL BE AVAILABLE FOR INSPECTION BY THE ELECTRICAL ENGINEER AT ANY TIME. UPON COMPLETION OF THE WORK, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH ONE SET OF AS-BUILT DRAWINGS FOR HIS REVIEW, AND IF FOUND ACCEPTABLE, TRANSFER TO THE OWNER.

4. CODES AND PERMITS

A. PERFORM WORK IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND ALL FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES.

B. OBTAIN AND PAY FOR ALL PERMITS, INSPECTIONS, AND CERTIFICATES THAT MAY BE NECESSARY FOR COMPLETION OF THE WORK.

A. COORDINATE WORK WITH OTHER TRADES TO ELIMINATE CONFLICTS. CONFIRM MECHANICAL EQUIPMENT LOCATIONS AND ELECTRICAL LOADS PRIOR TO ROUGH-IN.

B. COMPLY WITH ALL REQUIREMENTS FOR SERVICE OF THE POWER COMPANY, THE TELEPHONE COMPANY AND THE CABLE TV COMPANY. MEET WITH UTILITY COMPANIES PRIOR TO ROUGH-IN TO CONFIRM ALL OF THEIR REQUIREMENTS INCLUDING CLEARANCES WILL BE MET.

6. INSPECTION

A. ALL WORK SHALL BE SUBJECT TO OBSERVATION AT ANY TIME BY THE ARCHITECT, OWNER, OR

B. NOTIFY BUILDING DEPARTMENT OFFICIALS WHEN WORK IS READY FOR ANY REQUIRED INSPECTIONS.

A. GUARANTEE THAT ALL MATERIALS SHALL BE NEW AND FREE OF DEFECT AT THE TIME OF INSTALLATION. REPAIR OR REPLACE ANY DEFECTIVE MATERIAL OR WORK FOR A PERIOD OF ONE YEAR FROM THE DATE OF WRITTEN ACCEPTANCE BY THE OWNER.

8. MAINTENANCE AND OPERATING PROCEDURES A. AT THE COMPLETION OF WORK, INSTRUCT THE OWNER ON THE CORRECT MAINTENANCE AND

OPERATING PROCEDURES FOR THE ELECTRICAL SYSTEMS.

MAINTENANCE PROCEDURES, AND WARRANTIES

B. PREPARE A MAINTENANCE MANUAL FOR THE OWNER CONSISTING OF THE FOLLOWING:

1. ONE COPY OF ALL APPROVED SHOP DRAWINGS. EACH SHOP DRAWING SHALL INDICATE THE

NAME, ADDRESS, AND TELEPHONE NUMBER OF THE SUPPLIER. 2. MANUFACTURER'S INSTALLATION INSTRUCTIONS, OWNER'S MANUALS, PARTS LISTS, OWNER'S

C. SUBMIT THE MAINTENANCE MANUAL FOR REVIEW AT THE COMPLETION OF THE JOB. APPROVAL OF THE MAINTENANCE MANUAL BY THE ENGINEER SHALL BE A CONDITION OF FINAL PAYMENT.

9. PROTECTION

A. ALL WORK, MATERIAL, AND EQUIPMENT SHALL BE PROTECTED FROM DAMAGE OR LOSS DUE TO THEFT, WEATHER, ETC., UNTIL FINAL WRITTEN ACCEPTANCE BY THE OWNER.

B. POST DANGER SIGNS AND PHYSICAL BARRIERS TO PROTECT PEOPLE AGAINST HAZARDS CREATED BY THE WORK.

10. IDENTIFICATION

A. PROVIDE AND INSTALL ENGRAVED LAMINATED BLACK AND WHITE PHENOLIC NAMEPLATES FOR ALL SERVICE SWITCHES, PANELBOARDS, SAFETY SWITCHES, CABINETS, AND STARTERS.

B. NAMEPLATE SHALL INDICATE EQUIPMENT DESIGNATION, OR DESIGNATION OF EQUIPMENT SERVED

C. NAMEPLATES SHALL BE FIRMLY SECURED WITH TWO SHEET METAL SCREWS.

D. PROVIDE TAGS INSIDE RECEPTACLE BOXES AND PRINTED LABEL ON THE OUTSIDE OF RECEPTACLE COVERS INDICATING PANEL AND CIRCUIT NUMBER OF BRANCH CIRCUIT SUPPLYING THE DEVICE.

A. PERFORM ALL TRENCHING AND BACKFILLING REQUIRED FOR THE ELECTRICAL WORK.

B. BACKFILLING SHALL BE SUPERVISED BY THE GENERAL CONTRACTOR, AND SHALL BE ACCOMPLISHED IN 6" LIFTS, EACH COMPACTED TO 95% OR BETTER.

12. EQUIPMENT INSTALLATION

A. ALL EQUIPMENT SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER UNLESS

SPECIFICALLY INDICATED OTHERWISE.

B. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SUPPORTS, FOUNDATIONS, PADS, LIGHT POLE BASES, ETC., AS REQUIRED. THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF OTHER APPLICABLE DIVISIONS OF THE SPECIFICATIONS.

13. CHASES, SLEEVES, CUTTING AND PATCHING

11. TRENCHING AND BACKFILLING

A. PROVIDE FOR NECESSARY CHASES, HOLES, SLEEVES, BOXES, INSERTS, AND HANGERS BY ARRANGEMENT WITH CONTRACTORS OF OTHER TRADES.

B. PROVIDE FOR THE REPAIR OF ALL HOLES, OR OPENINGS, MADE TO ACCOMMODATE ELECTRICAL

C. OBTAIN WRITTEN APPROVAL FROM THE ARCHITECT BEFORE NOTCHING, CHIPPING, BURRING, DRILLING, OR WELDING OF STRUCTURAL MEMBERS.

B. BASIC MATERIALS AND EQUIPMENT

A. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE OF THE TYPE AND QUALITY SPECIFIED, NEW, AND, WHEN LISTED BY UNDERWRITERS LABORATORIES, SHALL MEET THEIR REQUIREMENTS AND BEAR THEIR LABEL WHEREVER STANDARDS HAVE BEEN ESTABLISHED AND LABEL SERVICE REGULARLY FURNISHED.

B. MATERIALS NOT MEETING THESE SPECIFICATIONS SHALL NOT BE BROUGHT ONTO THE SITE. IF MATERIALS WHICH DO NOT MEET THESE SPECIFICATIONS ARE DISCOVERED ON THE SITE, THEY SHALL BE DISPOSED OF, OR TRUCKED OFF OF THE SITE BY THE END OF THE DAY.

CIRCUIT BREAKER LOADCENTERS

A. THE LOADCENTER BUS ASSEMBLY AND BREAKERS SHALL BE ENCLOSED IN A 3 3/4" DEEP STEEL CABINET. FRONTS SHALL INCLUDE DOORS WITH SPRING-LOADED DOOR PULLS. A PERMANENT CIRCUIT DIRECTORY CARD SHALL BE PROVIDED ON THE INSIDE OF THE DOOR. THE DIRECTORY SHALL BE FILLED OUT IN PEN TO IDENTIFY THE LOAD FED BY EACH CIRCUIT

B. CIRCUIT BREAKERS SHALL BE FULL SIZE, QUICK-MAKE, QUICK-BREAK, PLUG-ON THERMAL-MAGNETIC, AND SHALL HAVE COMMON TRIP ON ALL MULTI-POLE BREAKERS. TANDEM OR WAFER THIN BREAKERS ARE NOT ACCEPTABLE.

C. BUS BAR CONNECTIONS TO THE BRANCH CIRCUIT BREAKERS SHALL BE THE "DISTRIBUTED PHASE" TYPE. THREE-PHASE, FOUR-WIRE BUSSING SHALL BE SUCH THAT ANY THREE ADJACENT SINGLE-POLE BREAKERS ARE INDIVIDUALLY CONNECTED TO EACH OF THE THREE DIFFERENT PHASES IN SUCH A MANNER THAT TWO OR THREE-POLE BREAKERS CAN BE INSTALLED AT ANY LOCATION.

D. SEE INDIVIDUAL SCHEDULES ON THE DRAWINGS FOR MAIN LUGS, OR MAIN BREAKER, BUS MATERIAL AND RATING, VOLTAGE, PHASES, SHORT CIRCUIT RATING, MOUNTING, NEMA RATING, AND BRANCH BREAKER REQUIREMENTS.

E. LOAD CENTERS SHALL BE SQUARE D TYPE QO WITH PLUG-ON BREAKERS, OR EQUAL BY G.E., WESTINGHOUSE CUTLER-HAMMER, OR SIEMENS.

F. SUBMITTALS SHALL INCLUDE BOTH GENERAL SPECIFICATIONS FOR THE EQUIPMENT AND FOR EACH LOAD CENTER, AN ELEVATION SHOWING PHYSICAL SIZE OF THE EQUIPMENT AND LOCATION AND RATING OF EACH CIRCUIT BREAKER. ALL SUBMITTALS SHALL BE PROVIDED ELECTRONICALLY IN 8 1/2" X 11" ADOBE PDF FORMAT.

3. SAFETY SWITCHES

A. PROVIDE SAFETY SWITCHES FOR ALL POLYPHASE MECHANICAL EQUIPMENT. SWITCHES SHALL BE FURNISHED IN NEMA 1 GENERAL PURPOSE ENCLOSURES UNLESS NEMA 3R (RAINPROOF) IS REQUIRED OR INDICATED ON THE PLANS. COVERS ON NEMA 1 ENCLOSURES SHALL BE ATTACHED WITH PIN TYPE

HINGES. RAINPROOF COVERS SHALL BE SECURABLE IN THE OPEN POSITION. 8. RACEWAY FITTINGS B. SWITCHES SHALL HAVE A QUICK-MAKE AND QUICK-BREAK OPERATING HANDLE AND MECHANISM WHICH SHALL BE AN INTEGRAL PART OF THE BOX, NOT THE COVER. SWITCHES SHALL HAVE A DUAL A. CONDUIT SEALS SHALL BE OF THE SIZE AND TYPE REQUIRED AND SHALL BE MANUFACTURED BY COVER INTERLOCK TO PREVENT UNAUTHORIZED OPENING OF THE SWITCH DOOR IN THE "ON"

C. SWITCH RATINGS SHALL BE AS INDICATED ON THE PLANS, OR AS REQUIRED FOR THE EQUIPMENT

POSITION OR CLOSING OF THE SWITCH MECHANISM WITH THE DOOR OPEN. HANDLE POSITION SHALL INDICATE IF THE SWITCH IS "ON" OR "OFF". ALL SWITCHES SHALL HAVE SWITCH BLADES WHICH ARE

FULLY VISIBLE IN THE "OFF" POSITION WHEN THE DOOR IS OPEN.

D. SAFETY SWITCHES SHALL BE SQUARE D, HEAVY DUTY TYPE, OR EQUAL BY G.E., WESTINGHOUSE,

E. SUBMITTALS SHALL INCLUDE MANUFACTURER'S STANDARD LITERATURE INDICATION DESIGN PARAMETERS, AND RATINGS. ALL SUBMITTALS SHALL BE PROVIDED ELECTRONICALLY IN 8 1/2" X 11"

CUTLER-HAMMER, OR SIEMENS.

A. CONVENIENCE OUTLETS SHALL BE 3 WIRE GROUNDING TYPE, 15 OR 20 AMP @ 125 VOLTS MANUFACTURERS AND CATALOG NUMBERS ARE INDICATED IN THE WIRING DEVICE SCHEDULE ON THE DRAWINGS. ALTERNATE MANUFACTURERS ARE INDICATED IN THE WIRING DEVICE SCHEDULE ON THE DRAWINGS. EQUALS BY OTHER MANUFACTURERS WILL BE CONSIDERED IF REQUESTED IN WRITING PRIOR TO BID.

B. LIGHT SWITCHES SHALL BE QUIET OPERATING TYPE, 15 OR 20 AMP @ 125 VOLTS. MANUFACTURERS AND CATALOG NUMBERS ARE INDICATED IN THE WIRING DEVICE SCHEDULE ON THE DRAWINGS. EQUALS BY OTHER MANUFACTURERS WILL BE CONSIDERED IF REQUESTED IN WRITING PRIOR TO BID.

C. SIGNAL OUTLETS SHALL BE INSTALLED IN FLUSH JUNCTION BOXES, AND SHALL INCLUDE A RACEWAY TO AN ACCESSIBLE LOCATION ABOVE THE CEILING. DEVICES SHALL BE REQUIRED IF INDICATED IN THE WIRING DEVICE SCHEDULE ON THE DRAWINGS. MANUFACTURERS AND CATALOG NUMBERS ARE INDICATED IN THE WIRING DEVICE SCHEDULE ON THE DRAWINGS. EQUALS BY OTHER MANUFACTURERS WILL BE CONSIDERED IF REQUESTED IN WRITING PRIOR TO BID.

D. SUBMITTALS SHALL CONSIST OF GENERAL SPECIFICATION SHEETS FOR EACH DEVICE AND COVERPLATE. THE SPECIFIC DEVICE(S) TO BE SUPPLIED SHALL BE CLEARLY INDICATED ON THE GENERAL SPECIFICATION SHEETS. ALL SUBMITTALS SHALL BE PROVIDED ELECTRONICALLY IN 8 1/2" X

A. LIGHTING FIXTURES SHALL BE AS SHOWN ON THE LIGHTING FIXTURE SCHEDULE. COMPLETE WITH LAMPS, PLASTER FRAMES, AND ACCESSORIES REQUIRED. CATALOG NUMBERS SHOWN ARE THE LATEST AVAILABLE AT THE TIME OF DESIGN. IN CASE OF DISCREPANCY BETWEEN CATALOG NUMBER AND DESCRIPTIVE INFORMATION, DESCRIPTIVE INFORMATION SHALL TAKE PRECEDENCE. BEFORE ORDERING ANY FIXTURES, VERIFY THE EXACT TYPE CEILING CONSTRUCTION, FIXTURE TRIMS, AND FINISHES WITH THE ARCHITECT AND MODIFY FIXTURE DESCRIPTION AND CATALOG NUMBER ACCORDINGLY.

B. BALLASTS SHALL COMPLY WITH THE BALLAST DESCRIPTION, AND NOTES IN THE LIGHTING FIXTURE SCHEDULE. UNIVERSAL, ADVANCE, JEFFERSON, OR G.E. BALLASTS MAY BE USED.

C. LAMP CATALOG NUMBERS SHOWN ARE FOR G.E. LAMPS. PHILIPS, WESTINGHOUSE OR SYLVANIA LAMPS ARE ACCEPTABLE SUBSTITUTES.

D. INSTALL LIGHTING FIXTURES STRAIGHT AND TRUE WITH REFERENCE TO ADJACENT WALLS, AND SECURELY FASTEN TO AND SUPPORT BY STRUCTURAL MEMBERS OF THE BUILDING.

E. ALL FIXTURES SURFACE MOUNTED ON CONCRETE SLABS SHALL BE FASTENED TO THE CONCRETE AT EACH FIXTURE CORNER WITH WEJ-IT EXPANSION SCREWS.

PP - LOADCENTER

208/120 VOLTS 3 PHASE 4 WIRE

LOAD TYPE AND CIRCUIT DESCRIPTION

NEMA1 ENCLOSURE

LIGHTING: LIGHTS

PROCESS: FLOW METERS

SPARE: UNALLOCATED FUTURE

100 AMP BUS

SPACE: ---

SPACE: ---

SPACE: ---

SPACE: ---

SPACE: ---

RECEPTACLE

MOTOR - HEATING

MOTOR - COOLING

MOTOR - YR RND ELECTRIC HEAT

_OADS BY TYPE (KVA)

CONNECTED DEMAND

RATINGS:

F. SUBMITTALS SHALL CONSIST OF GENERAL SPECIFICATION SHEETS FOR EACH FIXTURE, LAMP AND BALLAST TYPE PROPOSED. THE SPECIFIC EQUIPMENT TO BE SUPPLIED SHALL BE CLEARLY INDICATED ON THE GENERAL SPECIFICATION SHEETS. ALL SUBMITTALS SHALL BE PROVIDED ELECTRONICALLY IN 8 1/2" X 11" ADOBE PDF FORMAT.

 A. CHECK ARCHITECTURAL AND MECHANICAL DRAWINGS BEFORE INSTALLING OUTLETS. CHANGING OF OUTLETS TO CONFORM TO THESE DRAWINGS AND ANY OTHER SLIGHT CHANGE IN MOUNTING HEIGHT OR LOCATION OF OUTLETS REQUIRED SHALL BE CONSIDERED AS PART OF THIS CONTRACT AND NO EXTRA CHARGE SHALL BE ALLOWED.

B. USE OUTLET BOXES OF SUFFICIENT SIZE AND SHAPE TO BEST SUIT THE PARTICULAR LOCATION AND TO CONTAIN ENCLOSED WIRE AND CONNECTIONS WITHOUT CROWDING. USE DEEP BOXES WITH CONDUITS 1" AND LARGER. PROVIDE EXTENSIONS AND COVERS WHERE REQUIRED. NO OUTLET BOXES SMALLER THAN 4" SHALL BE INSTALLED.

C. LIGHTING OUTLETS SHALL BE STANDARD 4" OCTAGON OR SQUARE OUTLET BOXES PROVIDED WITH 3/8" MALLEABLE IRON FIXTURE STUDS AND BOX HANGERS WHERE REQUIRED.

D. SWITCH AND RECEPTACLE OUTLETS SHALL BE STANDARD 4" BOXES WITH COVER PLATES. WHERE MORE THAN ONE SWITCH OR DEVICE IS LOCATED AT ONE POINT, USE GANG BOXES AND GANG COVER PLATES. SECTIONALIZED OR GANGABLE BOXES ARE NOT ACCEPTABLE.

E. FLUSH MOUNT LIGHTING SWITCHES AND RECEPTACLES UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE PLANS

COPPER BUS

13000 AIC

REQUIRED OPTIONS & ACCESSORIES:

CONNECTED AMPS:

DEMAND AMPS:

CONNECTED KVA:

DEMAND KVA:

BALANCE %

SURFACE SINGLE TUB MOUNTING

F. USE WEATHERPROOF SWITCHES AND RECEPTACLES MOUNTED IN WEATHERPROOF OUTLET BOXES IN LOCATIONS EXPOSED TO WEATHER. WHERE RECEPTACLES ARE TO BE INSTALLED ABOVE HOT WATER BASEBOARD HEATING UNITS, MOUNTING HEIGHT SHALL BE TWO FOOT CENTERLINE ABOVE

G. OUTLET BOXES SHALL BE ONE-PIECE STEEL, GALVANIZED OR SHERADIZED AS MANUFACTURED BY STEEL CITY ELECTRIC, APPLETON ELECTRIC, OR RACO ALL-STEEL PRODUCTS. FOR INSTALLATION IN TILE, BRICK, WOOD PANELING, OR CEMENT BLOCK, BOXES SHALL HAVE 4" SQUARE TILE COVERS. USE "CADDY" BOX SUPPORTS FOR MOUNTING ON STEEL STUDS.

7. RACEWAYS

Á. RACEWAYS SHALL BE RIGID STEEL OR INTERMEDIATE METALLIC CONDUIT (IMC), ARMORED CABLE (AC), OR ELECTRICAL METALLIC TUBING (EMT) AS INDICATED. RACEWAYS SHALL BE GALVANIZED OR SHERADIZED, AND SHALL BE MANUFACTURED BY JONES & LAUGHLIN, ALLIED, OR TRIANGLE CONDUIT

B. EXPANSION FITTINGS SHALL BE OF THE SIZE AND TYPE REQUIRED, WITH BONDING JUMPER, AND SHALL BE MANUFACTURED BY O-Z ELECTRIC.

C. RIGID STEEL CONDUIT BUSHINGS SHALL BE NYLON INSULATED STEEL TYPE, AND SHALL BE T&B

SUBMITTALS SHALL INCLUDE STANDARD MANUFACTURER'S CATALOG CUTS INDICATING COMPLIANCE TO THESE SPECIFICATIONS. SUBMITTALS SHALL BE PROVIDED ELECTRONICALLY IN 8 1/2" X 11" ADOBE PDF FORMAT.

E. LOCKNUTS SHALL BE CASE HARDENED STEEL TYPE, AND SHALL BE T&B SERIES 141. F. EMT CONNECTORS AND COUPLINGS SHALL BE NYLON INSULATED THROAT TYPE, STEEL

G. FITTINGS AS MANUFACTURED BY O-Z ELECTRIC, APPLETON ELECTRIC, OR STEEL CITY ELECTRIC, OR EQUAL QUALITY MAY BE SUBSTITUTED FOR THOSE SPECIFIED.

CONSTRUCTION, SET SCREW, T&B SERIES 5031 AND 5030.

A. CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SLABS SHALL BE A MINIMUM OF 3/4" SCHEDULE 40 PVC, WITH A GROUND WIRE SIZED PER THE NEC.

B. CONDUIT EXPOSED TO MECHANICAL DAMAGE SHALL BE RIGID STEEL GALVANIZED. ALL OTHER CONDUITS MAY BE ELECTRIC METALLIC TUBING OR INTERMEDIATE METALLIC CONDUIT. C. MAKE CONDUIT BENDS WITH STANDARD CONDUIT ELBOWS OR CONDUIT BENT TO NOT LESS THAN

D. ALL FITTINGS IN WET PLACES, LOCATIONS EXPOSED TO WEATHER, OR BURIED IN MASONRY, CONCRETE, OR FILL SHALL BE WATERTIGHT. PROVIDE EXPANSION FITTINGS AT BUILDING EXPANSION JOINTS. CAP CONDUIT ENDS TO PREVENT ENTRANCE OF FOREIGN MATERIALS DURING

THE SAME RADIUS. ALL BENDS SHALL BE FREE FROM DENTS OR FLATTENING.

E. TAKE CARE TO PREVENT THE COLLECTION OF MOISTURE DUE TO CONDENSATION IN CONDUIT. SEAL ALL CONDUITS BETWEEN AREAS OF WIDELY DIFFERENT TEMPERATURES WITH THE SEAL BEING PLACED IN THE CONDUIT ON THE WARMER SIDE OF THE WALL.

F. INSTALL GALVANIZED SHEET STEEL PULL-BOXES, SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND EQUIPPED WITH GASKETS AND SCREW-ON COVERS IN CONDUIT RUNS WHERE REQUIRED TO FACILITATE PULLING OF WIRES AND CABLES. LOCATE ALL PULL-BOXES WHERE THEY WILL BE ACCESSIBLE AFTER COMPLETION OF THE BUILDING AND WHERE APPROVED BY THE

G. EQUIP ALL EMPTY CONDUITS WITH GALVANIZED IRON PULL-WIRES OF ADEQUATE SIZE.

H. WHERE CONDUIT TERMINATES AT A MOTOR LOCATION, FURNISH AND INSTALL A 12" SECTION OF FLEXIBLE CONDUIT BETWEEN THE MOTOR TERMINAL BOX AND THE CONDUIT OR OUTLET BOX.

I. RUN UNDERGROUND CONDUITS AND CONDUITS BURIED IN CONCRETE SLABS IN A DIRECT LINE. RUN EXPOSED CONDUITS AND CONDUITS CONCEALED IN WALLS OR ABOVE CEILINGS PARALLEL TO OR AT RIGHT ANGLES WITH THE LINES OF THE BUILDING. INSTALL ALL CONDUITS AT LEAST SIX INCHES AWAY FROM FLUES. STEAM PIPES, AND HOT WATER PIPES. SUPPORT ON APPROVED ALL BRACKETS, CEILING TRAPEZE HANGERS, OR CONDUIT STRAPS, SUITABLY ANCHORED TO THE BUILDING STRUCTURE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ARTICLE #300.

J. AC AND MC CABLE MAY BE USED WHERE ALLOWED BY CODE EXCEPT IT SHALL NOT BE USED FOR

BRANCH CIRCUIT HOME RUNS, OR FOR ANY EXPOSED WORK. RIGID CONDUIT SHALL BE USED

BETWEEN THE PANEL BOARD AND THE LAST BOX WITH A FLEX CONNECTION.

REQUIRED OPTIONS & ACCESSORIES:

AMPS | #/VA | LOAD TYPE AND CIRCUIT DESCRIPTION

2 PROCESS: SCADA PANEL

4 OUTLET: OUTLETS - NORTH

12 | SPARE: UNALLOCATED FUTURE

14 SPARE: UNALLOCATED FUTURE

16 SPACE: -

18 | SPACE: -

20 SPACE: ---

22 SPACE: ---

24 SPACE: --

36.9

66.8 97.6

38.3

37.4

4.3

44.6

15.4

16.1

55.2

58.1

TOTAL LOAD BY TYPE (KVA)

PROCESS

SPACE

MISCELLANEOUS

LARGEST MOTOR

8 | EQUIPMENT: AC-1 AIR HANDLER: HEAT PUMP

0.0

0.0

2.0

GROUND BUS

A. UNLESS INDICATED OTHERWISE, ALL CONDUCTORS SHALL BE HIGH-CONDUCTIVITY COPPER, #12 OR LARGER, WITH 600 VOLT INSULATION, SIZED AS INDICATED. ACCEPTABLE MANUFACTURERS SHALL BE G.E., ROME CABLE, ANACONDA WIRE & CABLE, TRIANGLE CONDUIT & CABLE, AND OKONITE.

B. UNLESS OTHERWISE DESIGNATED, WIRE AND CABLE FOR VARIOUS APPLICATIONS SHALL BE AS

#12 THROUGH #6, DRY LOCATIONS: TYPE THHN, 90 DEGREE C.

#12 THROUGH #6, IN SLABS OR WET LOCATIONS: TYPE THWN, 75 DEGREE C.

#4 AND LARGER: TYPE THW, 75 DEGREE C.

WIRING NEAR BOILERS OR OTHER HIGH TEMPERATURE AREAS WHERE OPERATING TEMPERATURES OF CONDUCTORS WILL EXCEED 90 DEGREES C.: TYPE AVA ASBESTOS AND VARNISHED CAMBRIC INSULATED, ASBESTOS BRAID JACKETED.

WIRE #10 AND SMALLER: SOLID.

WIRE #12 AND LARGER: STRANDED.

C. INSTALL A SEPARATE GREEN INSULATED GROUND WIRE SIZED PER TABLE 250-122 OF THE NATIONAL ELECTRICAL CODE IN ALL RACEWAYS.

D. DO NOT INSTALL WIRE IN CONDUITS UNTIL AFTER PLASTERING IS COMPLETED AND ALL CONDUITS IN WHICH MOISTURE HAS COLLECTED HAVE BEEN THOROUGHLY SWABBED OUT.

USE ALUMINUM CONDUCTORS ONLY WHERE SPECIFICALLY CALLED FOR. WHERE ALUMINUM CONDUCTORS ARE ALLOWED, TAKE CARE NOT TO CUT STRANDS WHEN STRIPPING INSULATION AWAY. THOROUGHLY CLEAN CONDUCTORS WITH EMORY CLOTH AFTER APPLICATION ON NO-OXIDE GREASE. USE CONNECTORS DESIGNED FOR ALUMINUM CONDUCTORS. USE A TORQUE WRENCH WHEN TIGHTENING CONNECTOR BOLTS, AND TORQUE TO VALUES RECOMMENDED BY THE CABLE MANUFACTURER.

9. POWER SERVICE ENTRANCE

A. THIS PROJECT SHALL BE SERVED UNDERGROUND FROM A POLE MOUNTED TRANSFORMER SUPPLIED AND INSTALLED BY THE POWER COMPANY.

B. THE POWER COMPANY SHALL PROVIDE THE TRANSFORMER, PRIMARY CONDUCTORS, AND PRIMARY AND SECONDARY TERMINATIONS. THE POWER COMPANY SHALL BILL THE OWNER DIRECTLY FOR THIS

C. THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS BID SUPPLYING AND INSTALLATION OF CONDUIT AND WIRE FROM THE TRANSFORMER SECONDARY TO THE MAIN POWER DISTRIBUTION EQUIPMENT, AND METER SOCKET.

D. ALL EQUIPMENT SHALL BE U.L. LABELED FOR USE AS SERVICE ENTRANCE EQUIPMENT.

E. WITHIN 10 DAYS OF CONTRACT AWARD, THE CONTRACTOR SHALL CONTACT THE POWER COMPANY, OBTAIN THEIR REQUIREMENTS FOR SERVICE AND NOTIFY THEM OF THE DESIRED SERVICE DATE.

F. EQUIPMENT RATINGS AND DISTRIBUTION SYSTEM CONFIGURATION SHALL BE AS INDICATED ON THE ONE-LINE DIAGRAM.

WIRING DEVICE SCHEDULE

DEVICE DESCRIPTION

A. IN GENERAL, LOW VOLTAGE CONTROLS FOR HVAC EQUIPMENT SHALL BE PROVIDED INSTALLED AND WIRED BY THE MECHANICAL SUBCONTRACTOR. IN GENERAL, LINE VOLTAGE CONTROLS SHALL BE SUPPLIED BY THE MECHANICAL SUBCONTRACTOR, AND INSTALLED AND WIRED BY THE ELECTRICAL SUBCONTRACTOR. SEE THE EQUIPMENT SCHEDULE ON THE PLANS FOR DIVISION OF RESPONSIBILITY FOR EACH PIECE OF EQUIPMENT.

11. PROJECT CLOSEOUT ITEMS

A. AT THE COMPLETION OF THE PROJECT, AND BEFORE FINAL PAYMENT, SUBMIT AS-BUILT DRAWINGS TO OUR OFFICE FOR APPROVAL.

B. AT THE COMPLETION FO THE PROJECT, AND BEFORE FINAL PAYMENT, SUBMIT MAINTENANCE MANUALS TO OUR OFFICE FOR APPROVAL. MAINTENANCE MANUALS SHALL CONSIST OF THE

1. APPROVED COPIES OF ALL SUBMITTALS 2. COPIES OF INSTALLATION INSTRUCTIONS IF SUPPLIED BY THE MANUFACTURER

3. COPIES OF ALL WARRANTIES AND GUARANTEES FROM MANUFACTURERS 4. COPIES OF ALL WARRANTIES AND GUARANTEES FROM THE INSTALLING CONTRACTOR

5. OPERATING INSTRUCTIONS FOR ALL EQUIPMENT REQUIRING SET-UP

JPE1: EQUIPMENT MOUNTED POWER J-BOX MANUFACTURER: APPLETON BOX SIZE & DEPTH: 4" SQUARE / 2-1/8" CATALOG #: 4S 1/2 BOX OPENINGS: 1/2" & 3/4" KO'S PROVIDE THE SPECIFIED DEVICE OR SUBMIT A CUT SHEET FOR COLOR: SILVER **BOX MATERIAL: CAST ALUMINUM** AN ALTERNATE DEVICE 5 DAYS PRIOR TO BID. A CONTRACTOR EQUIPMENT MOUNTED RATING: UNRATED BOX NEMA RATING: TYPE 3R SUPPLIED BOX IS NOT REQUIRED IF THE BOX IS SUPPLIED POWER J-BOX RING SIZE & OPENING: NR / NR STYLE: ---WITH THE EQUIPMENT. RING COLAR DEPTH: RING NOT REQUIRED NEMA CONFIGURATION: GRADE: ---RING MATERIAL: RING NOT REQUIRED MOUNTING: SURFACE COVER MATERIAL: STAMPED STEEL LOCATION: ABOVE 32F & DAMP COVER COLOR & OPENING: SILVER / BLANK BOX SIZE & DEPTH: 4" SQUARE / 2-1/8" MANUFACTURER: APPLETON JSE1: EQUIPMENT MOUNTED SIGNAL J-BOX CATALOG #: 4S 1/2 BOX OPENINGS: 1/2" & 3/4" KO'S PROVIDE THE SPECIFIED DEVICE OR SUBMIT A CUT SHEET FOR COLOR: SILVER BOX MATERIAL: CAST ALUMINUM AN ALTERNATE DEVICE 5 DAYS PRIOR TO BID. A CONTRACTOR EQUIPMENT MOUNTED BOX NEMA RATING: TYPE 3R SUPPLIED BOX IS NOT REQUIRED IF THE BOX IS SUPPLIED RATING: UNRATED SIGNAL J-BOX STYLE: ---RING SIZE & OPENING: NR / NR WITH THE EQUIPMENT. NEMA CONFIGURATION: RING COLAR DEPTH: RING NOT REQUIRED GRADE: ---RING MATERIAL: RING NOT REQUIRED MOUNTING: SURFACE COVER MATERIAL: STAMPED STEEL LOCATION: ABOVE 32F & DAMP COVER COLOR & OPENING: SILVER / BLANK MANUFACTURER: LEVITON BOX SIZE & DEPTH: 1 GANG / 2-1/8" ROD1: DUPLEX OUTDOOR GFCI RECEPTACLE ROD1 CATALOG #: W7599 BOX OPENINGS: 1/2" & 3/4" KO'S PROVIDE THE SPECIFIED DEVICE OR AN EQUIVALENT DEVICE BY COLOR: WHITE BOX MATERIAL: CAST ALUMINUM HUBBELL OR PASS & SEYMOUR OR SUBMIT A CUT SHEET FOR AN RATING: 15A BOX NEMA RATING: TYPE 3R ALTERNATE DEVICE 5 DAYS PRIOR TO BID. PROVIDE LOCKABEL OUTDOOR GFCI RECEPTACLE STYLE: DECORA RING SIZE & OPENING: NR / NR METAL IN-USE COVER AND CORROSION RESISTANT DEVICE. NEMA CONFIGURATION: 5-15R RING COLAR DEPTH: NR GRADE: COMMERCIAL RING MATERIAL: NR MOUNTING: SURFACE COVER MATERIAL: CAST ALUMINUM LOCATION: ABOVE 32F & DAMP COVER COLOR & OPENING: SILVER / DECORA MANUFACTURER: SQUARE D BOX SIZE & DEPTH: 6.5" W X 15.0" H / 5.0" SSI1: INTERIOR MOUNTED NON-FUSED SAFETY SWITCH CATALOG #: H361N BOX OPENINGS: 1/2" & 3/4" KO'S PROVIDE THE SPECIFIED DEVICE OR AN EQUIVALENT DEVICE BY **BOX MATERIAL: PRESSED STEEL** SIEMENS OR G.E. OR SUBMIT A CUT SHEET FOR AN ALTERNATE INTERIOR MOUNTED RATING: 30A 3PHASE BOX NEMA RATING: TYPE 3R DEVICE 5 DAYS PRIOR TO BID. SEE EQUIPMENT SCHEDULE FOR NON-FUSED SAFETY SWITCH STYLE: HEAVY DUTY RING SIZE & OPENING: NR / NR FUSE SIZE. NEMA CONFIGURATION: NON-NEMA RING COLAR DEPTH: NR GRADE: INDUSTRIAL RING MATERIAL: NR COVER MATERIAL: NR MOUNTING: SURFACE LOCATION: -20F TO 120F & WET COVER COLOR & OPENING: NR / NR MANUFACTURER: LEVITON BOX SIZE & DEPTH: 1 GANG / 2-1/8" STS1: SINGLE TIMER SWITCH CATALOG #: LTB60-1L-W BOX OPENINGS: 1/2" & 3/4" KO'S PROVIDE THE SPECIFIED DEVICE OR AN EQUIVALENT DEVICE BY COLOR: WHITE BOX MATERIAL: CAST ALUMINUM HUBBELL OR PASS & SEYMOUR OR SUBMIT A CUT SHEET FOR AN RATING: 20A BOX NEMA RATING: TYPE 3R ALTERNATE DEVICE 5 DAYS PRIOR TO BID. BUTTONS FOR - 10 TIMER SWITCH STYLE: DECORA RING SIZE & OPENING: NR / NR - 20 - 30 - & 60 MINUTES. NEMA CONFIGURATION: ---RING COLAR DEPTH: NR GRADE: COMMERCIAL RING MATERIAL: NR MOUNTING: SURFACE COVER MATERIAL: THERMOPLASTIC LOCATION: ABOVE 32F & DAMP COVER COLOR & OPENING: WHITE / DECORA MANUFACTURER: SQUARE D BOX SIZE & DEPTH: 7.25" W X 9.63" H / 3.75" D SVX1: EXTERIOR MOUNTED FUSED SERVICE SWITCH SVX1 CATALOG #: H223NRB BOX OPENINGS: 1/2" & 3/4" KO'S PROVIDE THE SPECIFIED DEVICE OR AN EQUIVALENT DEVICE BY COLOR: GRAY BOX MATERIAL: PRESSED STEEL SIEMENS OR G.E. OR SUBMIT A CUT SHEET FOR AN ALTERNATE EXTERIOR MOUNTED RATING: 100A 3PHASE BOX NEMA RATING: TYPE 3R DEVICE 5 DAYS PRIOR TO BID. FUSED SERVICE SWITCH STYLE: HEAVY DUTY RING SIZE & OPENING: --- / ---NEMA CONFIGURATION: RING COLAR DEPTH: ---GRADE: INDUSTRIAL RING MATERIAL: ---MOUNTING: SURFACE COVER MATERIAL: -LOCATION: -20F TO 120F & WET COVER COLOR & OPENING: --- / ---BOX SIZE & DEPTH: 7.25" W X 9.63" H / 3.75" D MANUFACTURER: SQUARE D SVX2: EXTERIOR MOUNTED FUSED SERVICE SWITCH SVX2 PROVIDE THE SPECIFIED DEVICE OR AN EQUIVALENT DEVICE BY CATALOG #: H224NRB BOX OPENINGS: 1/2" & 3/4" KO'S

BOX MATERIAL: PRESSED STEEL

BOX NEMA RATING: TYPE 3R

RING SIZE & OPENING: --- / ---

RING COLAR DEPTH: ---

BOX / RING / COVER

ADDITIONAL DESCRIPTION

SIEMENS OR G.E. OR SUBMIT A CUT SHEET FOR AN ALTERNATE

DEVICE 5 DAYS PRIOR TO BID.

GRADE: INDUSTRIAL RING MATERIAL: ---MOUNTING: SURFACE COVER MATERIAL: -LOCATION: -20F TO 120F & WET COVER COLOR & OPENING: --- / ---1. DEVICES BY MANUFACTURERS WHICH ARE NOT LISTED IN THE SCHEDULE REQUIRE 5-DAY WRITTEN PRIOR APPROVAL. 2. CONNECT GROUND WIRE TO DEVICE GROUNDING SCREW EVEN IF DEVICE IS LABELED SELF-GROUNDING.

COLOR: GRAY

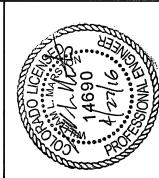
RATING: 200A 3PHASE

NEMA CONFIGURATION:

STYLE: HEAVY DUTY

EXTERIOR MOUNTED

FUSED SERVICE SWITCH



TT 7

Project No.: 160110 04/11/16 Drawn By: KLT

SCHEDULES & DETAILS

Revisions